

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 20 JAN 2005

WIPO PCT

Applicant's or agent's file reference <b>M962-PCT</b>	<b>FOR FURTHER ACTION</b> <div style="text-align: right;">See Form PCT/IPEA/416</div>	
International application No. <b>PCT/JP2004/000239</b>	International filing date (day/month/year) <b>15.01.2004</b>	Priority date (day/month/year) <b>15.01.2003</b>
International Patent Classification (IPC) or national classification and IPC <b>C22C38/00, C23C2/40, C21D9/46</b>		
Applicant <b>NIPPON STEEL CORPORATION et al.</b>		
<ol style="list-style-type: none"> <li>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</li> <li>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</li> <li>3. This report is also accompanied by ANNEXES, comprising:               <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> sent to the applicant and to the International Bureau) a total of    sheets, as follows:                   <div style="margin-left: 20px;"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).                   <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.                 </div> </li> <li>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</li> </ol> </li> </ol>		
<ol style="list-style-type: none"> <li>4. This report contains indications relating to the following items:               <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Box No. I      Basis of the opinion  <input type="checkbox"/> Box No. II     Priority  <input type="checkbox"/> Box No. III    Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  <input type="checkbox"/> Box No. IV    Lack of unity of invention  <input checked="" type="checkbox"/> Box No. V     Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  <input type="checkbox"/> Box No. VI    Certain documents cited  <input type="checkbox"/> Box No. VII    Certain defects in the international application  <input type="checkbox"/> Box No. VIII   Certain observations on the international application             </div> </li> </ol>		
Date of submission of the demand  <b>26.03.2004</b>	Date of completion of this report  <b>18.01.2005</b>	
Name and mailing address of the international preliminary examining authority:  <div style="display: flex; align-items: center;"> <div>             European Patent Office              D-80298 Munich              Tel. +49 89 2399 - 0 Tx: 523656 epmu d              Fax: +49 89 2399 - 4465           </div> </div>	Authorized Officer  <b>Rolle, S</b>  Telephone No. +49 89 2399-7980	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

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**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-55 as originally filed

**Claims, Numbers**

1-13 as originally filed

**Drawings, Sheets**

1/4-4/4 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-13
Inventive step (IS)	Yes: Claims	
	No: Claims	1-13
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following document:

D1: EP-A-1 160 346 (NIPPON STEEL CORP) 5 December 2001 (2001-12-05)

2. Novelty

2.1 Document **D1** discloses (cf. claim 1, paragraphs 6, 10, Tab.1 and 2, Example a) a hot-dip galvanized steel sheet having a steel composition consisting of (in weight %): 0.05-0.2% C, 0.2-2.0% Si, 0.2-2.5% Mn, 0.01-1.5% Al, 0.2-5.0% Ni, P < 0.03%, S < 0.02%, with the balance being Fe and usual impurities. This alloy overlaps broadly with the alloy claimed in claim 1 of the present application. Examples in Tab.1 in D1 fall in the composition range of claim 1 of the present application and fulfill the relationship in claim 1 (cf. e.g. Example a in Tab.1). D1 also discloses a method (cf. claims 13 and 14, paragraphs 45, 46) for producing a high-strength hot-dip galvanized steel sheet with the method steps: hot rolling, cold rolling, annealing from 10 seconds to 6 minutes in the two-phase temperature range of 650-900° C, cooling to 350-500° C at a cooling rate of 2-200° C/s, hot-dip galvanizing, and then cooling to below 250° C at a cooling rate of at least 5° C/s, which is the same as in claim 7 of the present application.

The occupation of 5-80% of the steel sheet surface with oxides is not disclosed in D1. However, since the alloy composition and the manufacturing method are the same, the microstructure must inevitably also be the same. The microstructure of D1 is therefore inherently the same as that claimed.

2.2 Hence, the hot-dip galvanized steel sheet of **claim 1** is not novel (Article 33(2) PCT). The same may be said of the hot-dip galvanized steel sheet in **claims 2-6 and 11-13**.

2.3 Also, the methods of **claims 7 and 8** are not novel (Article 33(2) PCT). **Claims 9 and 10** do not seem to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see document D1 and the corresponding passages cited in the search report.

3. Remarks

3.1 The present set of claims comprises a plurality of independent product and process claims, in particular there are three claims (claims 1,5 and 6) relating to an alloy per se and four process claims (claims 7-10). This is, firstly, considered to be not concise within the meaning of Art.6 PCT. Secondly, it obscures the precise nature of the inventive concept, to the extent that there may exist more than one inventive concept, Rule 13(1) PCT.

If there is one inventive concept, then it must be possible to draft one independent claim per category relating to the concept. If not, the applicant should consider filing divisional applications. The requirement of Art.6 concerning conciseness and clarity are not satisfied. Since claims 5 and 6 are de facto preferred embodiments of the steel of claim 1, then they should be indicated as such.

3.2. Alloys are largely dependent for their properties on the composition. Any slight variation in the composition will have implications for the properties which may even be completely unexpected and large. Hence, an independent claim relating to an alloy, in which the composition plays a role in determining the final properties must define the composition in a clear, precise and exhaustive manner. If it is not so defined, then the alloy composition may possibly not achieve the properties as set out in the application, in the present case attain an alloy with desired hot-dip galvanizing ability, tensile strength and workability properties. In such a case the alloy could not be inventive.

3.2.1. Terms such as "containing" when used without a balance, i.e. a balance of iron (claims 1,2,4,5,6), allow the inclusion of further unnamed elements in unspecified quantities, this resulting in an alloy with unforeseeable properties. In this particular case and as specified in the description, the effects and advantages of the invention are achieved with an alloy composition 100% defined.

3.2.2. The alloy composition of claim 1 is not exhaustively disclosed, since claims 2 and 4 allow further optional additions. Hence, **claim 1** is unclear. The optional additions of the dependent claims should be included in the main claims to which they refer.

3.2.3. The alloy composition of claims 5 and 6 seems to be not at all defined.

3.3. It is not clear from the wording in claim 1 if "the surface (area) of said steel sheet" is the steel surface or the hot-dip galvanized steel sheet surface.

3.4. Claim 1, which is directed towards a product, attempt to define the subject-matter in terms of a process: "after a hot-dip plating layer is dissolved by fuming nitric acid". However, such a definition is only allowable under the conditions, that the product as

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such fulfil the requirements for patentability, i.e. inter alia that it is new and inventive. A product is not rendered novel merely by the fact that it is produced by means of a new process. Therefore, claim 1 is also not clear. A similar objection applies to claims 11-12.